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ILLINOIS STATE POLICE
Office of the Director

Jim Edgar
Governor

Terrance W. Gainer
Director

Before the
Federal Communication Commission
Washington, D.C. 20554

In the Matter of	)	
Replacement of Part 90 by Part 88 to	)	**PR Docket 92-235**
Revise the Private Land Mobile Radio	)	
Services and Modify the Policies	)	
Governing Them	)	

COMMENTS OF THE

ILLINOIS STATE POLICE
Office of the Director

Jim Edgar
Governor

Terrance W. Gainer
Director

May 27, 1993

Office of the Secretary
Federal Communication Commission
1919 M Street, N.W.
Washington, DC 20554

Ladies and Gentlemen:

The state of Illinois submits the following comments in response to the Federal Communication Commission's Notice of Proposed Rule Making entitled "Revision of Regulations on the Private Land Mobile Radio Services; Modification of Policies" published in the November 16, 1992, Federal Register.

The state of Illinois recognizes the tremendous effort put forth by the commission in the development of the Proposed Rule Making presented for comment in PR Docket No. 92-235, Replacing Part 90 in Part 88 for Private Land Mobile Radio Services. This Notice of Proposed Rule Making addresses many of the concerns and needs of present and future, public and private, two-way radio users in Illinois and the nation. The state of Illinois is pleased to submit comments to the docket for the commission's consideration.

The state of Illinois' two-way communications systems in operation today would require significant changes if the proposed rules were to be implemented. The state of Illinois' agencies affected include:

Illinois Commerce Commission
Illinois Criminal Justice Information Authority
Illinois Department of Central Management Services
Illinois Department of Conservation
Illinois Department of Corrections
Illinois Department of Mental Health and Developmental Disabilities
Illinois Department of Revenue
Illinois Department of State Police
Illinois Department of Transportation
Illinois Emergency Management Agency
Illinois Secretary of State Police
Illinois State Lottery

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While each agency has specific problems and concerns for the respective public service operations the key concerns to the state of Illinois are:

The implementation date of January 1, 1996, is too close for the state of Illinois to plan, budget and implement the system changes mandated by the proposed rules. A date of January 1, 2000, is recommended as a more realistic target date for implementation.

The mandated reductions in tower height and transmitter power output will create wide area coverage loss in existing wide area and statewide area coverage which will require large investments to establish an additional tower, transmitter sites and control equipment to maintain radio coverage in critical public safety systems. The cost of building and maintaining wide area coverage systems is greatly increased under this proposal. We believe wide area systems for public agency use can be designed to minimize interference, be cost effective to install and operate, and should be taken into consideration specifically within Part 88.

The yet to be defined implementation schedule of proposed changes, in particular channel spacing, would require multiple replacement of radios far sooner than state agencies would normally budget and replace this equipment. This would be very costly to all affected agencies and to the taxpayers of Illinois. Fiscal impact to Illinois agencies could exceed $100 million depending on final rule requirements. In addition to helping identify federal sources of funding to assist in the resolution of this specific situation, a one-step migration path is strongly suggested with conversion time frames suitable for the 12- to 15-year service life cycle of public agency radio systems.

Part 88, as it is written, would dramatically reduce the use of mobile relays in the 150-174MHz band. Such repeater systems are essential to communications throughout the state of Illinois. As an example, wildfire control is of great concern among state, federal and local agencies. Adequate, prompt radio communication is vital to wildfire control in Illinois. Through a system of mobile relays, these agencies effectively coordinate the detection and suppression of wildfires. Similar examples can be given throughout the state regarding other public service type activities. I recommend the commission assign channels in the 150-174MHz band in pairs similar to the methods used in UHF and 800MHz.

Interoperability is extremely important to all Illinois public safety agencies. State and federal forestry agencies, as well as local fire fighting and law enforcement personnel in southern Illinois, now enjoy the benefits of interoperability due to shared communication systems. The Illinois Department of Conservation, in agreement with the National Forestry Conservation Communications Association, Inc., suggest that adopting standards for narrow band technology, such as APCO 25, would begin to resolve the compatibility and interoperability issues.

Specific technical concerns that individual departments have with the proposed rule making are enclosed. Also enclosed are signature sheets from the affected agencies.

I commend the commission for the excellent work completed to date on behalf of the land mobile radio community. I am sure our comments along with the many others received will result in new rules which will best serve the needs of all users in the future. Thank you for the opportunity to comment.

Very respectfully,

Terrance W. Gainer

Terrance W. Gainer
Director

Enclosures

Before the
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COMMENTS OF THE
STATE OF ILLINOIS

I, the undersigned, support the response filed as "COMMENTS OF THE STATE OF ILLINOIS"

Dennis E. Nowicki

DIRECTOR

DATE

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Washington, D.C. 20554

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COMMENTS OF THE
STATE OF ILLINOIS

I, the undersigned, support the response filed as "COMMENTS OF THE STATE OF ILLINOIS"

Brent Manning
DIRECTOR

May 17, 1993
DATE

Before the
Federal Communication Commission
Washington, D.C. 20554

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COMMENTS OF THE
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DIRECTOR

5/18/93
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DIRECTOR

May 19 1993

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DIRECTOR

DATE

Before the
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In the Matter of)

The Illinois Department of Transportation commends the Commission on its desire to increase the availability of spectrum to users with the needs that cannot be met under the current regulations. We fully support the implementation of new technology and techniques for frequency allocation to maximize use of the spectrum available to land mobile users.

BACKGROUND:

The Illinois Department of Transportation Communication System is comprised of approximately 3600 mobile radios. In the Chicago area we operate a high band system that covers a six county area. Approximately 1200 radios currently operating in this area would be drastically affected by this proposal. Throughout the rest of the state we have approximately 2400 low band mobiles. The Department also operates a call box system using the 72 to 76 Mhz frequency range in the East St. Louis area. The Illinois Department of Transportation Communication System has been developed over a number of years and represents an investment of over $20 million. The current proposal involves high band systems and therefore does not affect our operation in the "downstate" area as it is currently written.

The greatest impacts of this proposal on our Department are the new standards for spectral efficiency and the future changes that mandate digital modulation formats in the high band frequencies, and the low power/low tower requirements. The height and power restrictions would increase the number of transmitter sites and frequencies required to cover our service area. Examples of the effects of these requirements are shown in Figures 1 and 2 attached to this document. The long term growth and operation of our system would also be affected by the frequency allocation mandated by this proposal.

Specific Comments to NPR-92-235

MIGRATION

The biggest concern is mandating narrowband technology prior to the commercial availability of operational or "type accepted" equipment. In order to plan for the migration to new technology compliant with the

appear as an overall degrading of coverage area already hindered by reduced base Effective Radiated Power with receiver gain circuits being controlled and "limited" by adjacent channel signals.

Tests with our most recent generation equipment ostensibly programmable for narrowband use indicate compliant transmitters, but receivers incapable of rejecting the next two adjacent channels. As a result, presently quiet systems would become filled with noise from new allocations. Correspondingly, new allocations would experience noise from existing users. Data and squelch protection are meaningless when adjacent channel noise mixes with the on-channel information. The result is unintelligible communications.

In order to comply with the intention of the proposed rule making, public safety agencies would be required to virtually replace all two-way radio equipment currently in use. Governmental agencies do not have unlimited pools of funding able to make major purchases without proper planning and the lead times required for the legislative budget process. Large and small agencies alike will feel this hardship, with the tax payer ultimately carrying the burden.

An alternative to re-defining allocations within existing spectrum would be starting fresh in blocks vacated by VHF broadcast television. New technology could be mandated for operation on the new allocations, with an organized migration of current users. As users construct the new facilities, revocation of existing authorizations should be enforced (unlike past migrations from lower frequencies to 800 MHz where agencies are allowed to retain authorizations after construction of new systems). This will prolong the migration to new technology, but will allow additional time for manufacturers and users to coherently plan system changes.

FREQUENCY COORDINATION

In the pooling of channels to allow for more efficient utilization of allocations, the necessity of communications between frequency coordination agencies becomes more critical. Criteria must be consistent regarding separation, adjacent channel utilization, and channel loading. Special considerations must be allowed for large scale users and users with unusually large geographic coverage as in the case of State Police and Transportation agencies where boundaries are delineated as the State borders. A municipal fire department cannot interfere with or be adversely affected by a statewide system.

The notice of proposed rule making provides two options for frequency allocation. We favor Option 2, retaining current services and existing allocations and assigning new frequencies to new broad categories and the General Pool. We feel this option provides existing users with the greatest level of protection. It also provides specific allocations for the services currently defined. It does not allow services with current resources to monopolize the spectrum to the extent Option 1 would. While we understand and support the concept of a General Pool, we fear the

bureaucratic processes used by Public Safety entities for planning and budgeting would place Public Safety Organizations at a disadvantage in obtaining frequencies from a general pool if rapid response is required.

Current technology can be utilized to provide accurate data regarding channel utilization, area of operation for mobile relays, itinerant mobile operation, and channel loading. A common accessible data base

By no means should commercial operations be allowed adjacent to public safety channels. Commercial interests do not have the same geographical boundaries as public safety therefore coordination cannot be calculated in similar manners. The result of itinerant operations by business users will result in adjacent or co-channel interference to both parties.

The proposal to allow Public Safety systems to be eligible for channels in other services is a good idea.

Transmitter Power/Antenna Height Requirements 88.429

While this idea provides for frequency reuse in congested areas and may lead to some improvement in spectral usage, in rural areas a high power high tower operation may be the only economically feasible way to provide coverage of the area. While the intent of this proposal is good, it lacks flexibility and provides no alternatives suitable for rural areas. Signal strength criteria at a point somewhere beyond the edge of the coverage area would provide a better definition. The cost of building and maintaining wide area coverage systems is greatly increased under this proposal, with little or no increase in spectral efficiency. For systems requiring more than 4 towers to cover their service area under Part 88 criteria, the requirements of Part 90 should be applied. This approach would increase spectral efficiency by not forcing wide area coverage systems to occupy large numbers of frequencies.

Consideration should be made for wide area systems, especially trunking systems, to allow for higher tower operation. The limitation on antenna height and power restrictions is self-defeating. The ultimate goal of an agency is to provide communications within the boundaries of operations. If this is currently being achieved with higher antennas, the break-even position is to increase the number of lower antennas with lower power, thus increasing the coordination boundaries required and, in some instances, also increase the number of allocated channels to provide the same level of integrity. Spectrum gained in lowering the antennas and power is lost in duplicating channel allocation.

A possible solution would be to block wide area systems separate from other allocation pools. The wide area allocations should provide for a buffer channel (possibly allocated as a splinter channel for the wide area user) between assignments. This would alleviate adjacent channel interference for all parties concerned without duplicating channel assignment to the large user.

Coordination should be based on required need and field strength contours, as used in NPSPAC Regional Plans. One transmitter, or several lower powered transmitters will still have the same effect on co-channel reassignment separation.

MUTUAL AID AND INTEROPERABILITY:

Provision should be made for the assignment of channels for interagency utilization, not on an exclusive use basis, but for all public safety agencies involved in emergency response. These channels should be operated as single frequency simplex since most disasters occur within range of standard mobile transmissions.

The requirements for modulation schemes, or digital encoding and decoding of audio, should be standardized. No one vendor should be allowed proprietary schemes for public safety radio production unless a common mode of operations is also available on the same unit. Non-inter-operability could cause serious problems in coordinating trunked or conventional radio systems in disaster response.

Out of Band Chirp 88.425 c

While a relaxed frequency stability requirement is acceptable, the current requirement is too loose. It should contain a provision that prevents any spurious emissions in excess of twice the limit for the

Public Safety Covert Operations 88.941

The ability for covert operations to utilize spread spectrum technology and possibly encryption for covert operations is conditionally acceptable. The exemption from identification and the ability to use "available frequencies" in operations of this nature can severely impact other public safety operations unknowingly by assuming a repeater input frequency is unused. Without identification the potential interference becomes more difficult to resolve.

TIS Frequencies 88.1091

The deletion of primary frequencies at 530 and 1610 kHz effects transportation operations. The TIS systems currently provide a great deal of information to the traveling public. TIS systems should have at least 2 primary allocations in the AM broadcast band. This change from the current rules could result in problems for TIS systems currently operating or future systems.

CONCLUSION

The 1996 deadline is unfeasible at this time based on availability of suitable technology and the budget planning time frames required for public agencies. Allocation of the 5 kHz and 6.25 kHz channels prior to the availability and use of new technology would cause problems and serious degradation of existing Public Safety systems. Limitations in ERP and pooling of channel allocations will complicate coordination procedures. Systems activating additional transmitters to cover present operational areas and creation of new adjacent channel users will further burden frequency coordination. In the end, many tax supported users will be required to invest heavily into new technology. The rules must recognize and allow for the time frames needed by public agencies to develop and fund budget initiatives to implement requirements for new technologies. Secondly, required migration to a new technology must be justified by and provide significant improvements to the end user.

9405M

FIGURE 1

DISTRICT 1 450 Mhz RADIO COVERAGE

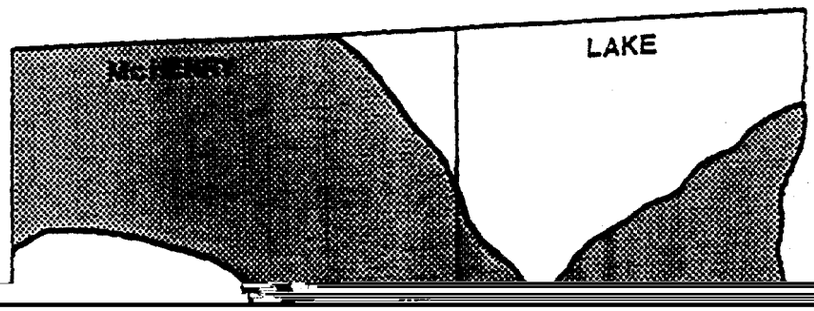
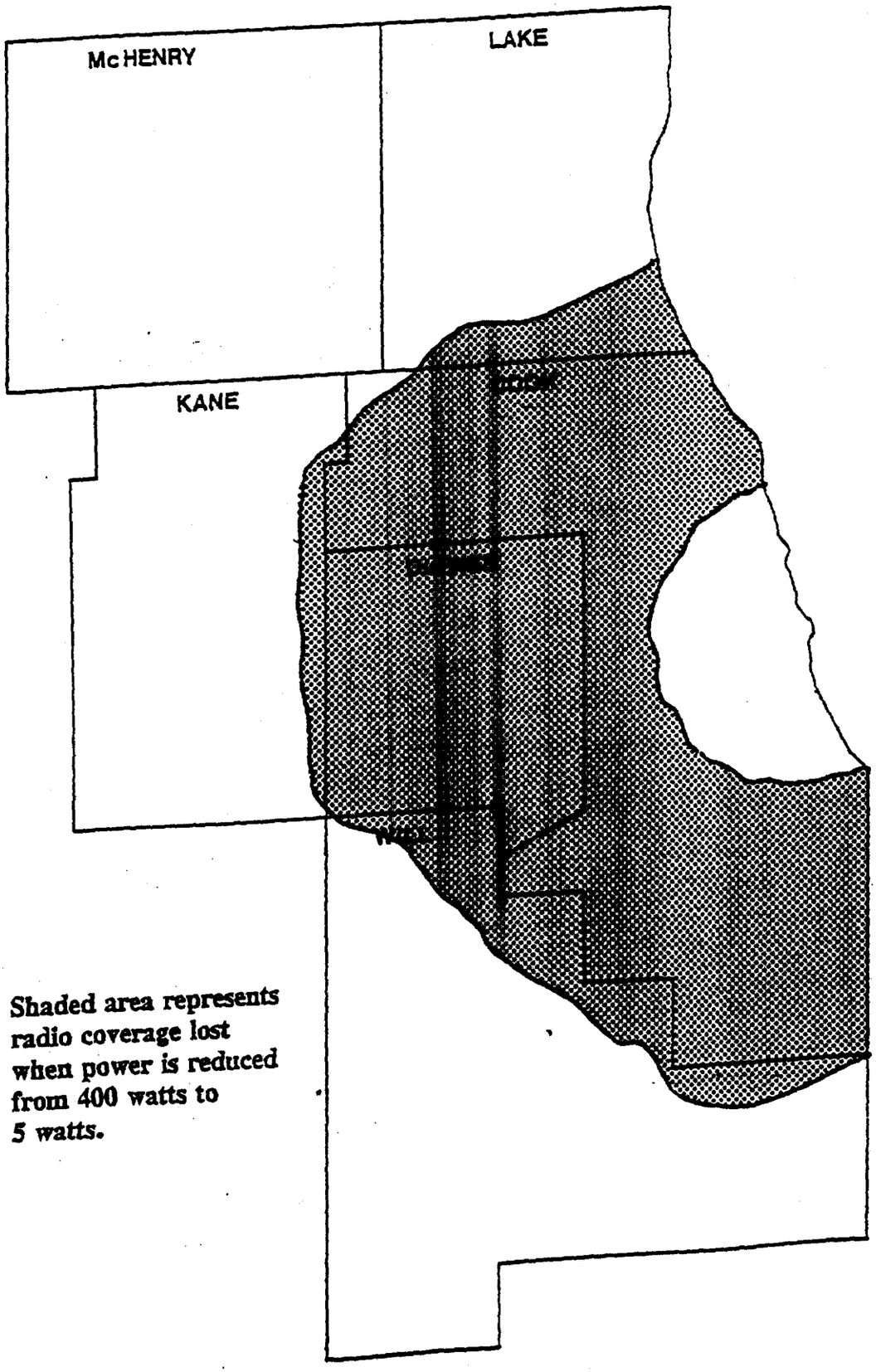


FIGURE 2

DISTRICT 1

Frequency 7

Located at Chicago, Illinois
Transmit 453.300 Mhz



Shaded area represents radio coverage lost when power is reduced from 400 watts to 5 watts.